

Amendments to the Claims:

This listing will replace all prior versions, and listings, of the claims in the application.

Listing of Claims:

1. (original) An apparatus for detecting the hydrogen content of an object (101), wherein the apparatus (100) comprises

- a neutron source (103) that emits fast/energy-rich neutrons;
- a detector device (102; 102a; 102b) for detecting thermal neutrons;
- a moderator (104; 104'; 104'') that brakes and reflects neutrons upon collision;

characterised in that

- said detector device comprises
  - a light-emitting unit (102b) that emits light in case of a nuclear event/reaction with a thermal neutron; and
  - a light-registering unit (102a) that emits an electric pulse/an electric signal (106) when a flash of light is detected;
- said moderator (104', 104'') is a light-conductive unit arranged between said light-emitting unit (102) and said light-registering unit (102a); and
- said neutron source (103) is embedded in said moderator (104').

2. (original) An apparatus according to claim 1, characterised in that said light-emitting unit (102b) is a scintillator and that said light-registering unit (102a) is a photo-multiplier (PM) or a photo-diode.
3. (previously presented) An apparatus according to claim 1, characterised in that said source (103) is arranged essentially in proximity of or about/in the centre of the face of said moderator (104', 104'') that adjoins the light-emitting unit (102b).
4. (previously presented) An apparatus according to claim 1, characterised in that said light-conductive unit (104') is configured essentially with a face that adjoins said light-emitting unit (102b) and having a relatively smaller face adjoining a detection face (107) of said light-registering unit (102a).
5. (previously amended) An apparatus according to claim 1, characterised in that said light-conductive unit (104'') is configured for emitting light conducted from said light-emitting unit (102b) to the light-registering unit (102a) essentially perpendicular to a detection face (109) of the apparatus (100).
6. (previously amended) An apparatus according to claim 1, characterised in that said light-conductive unit (104'') is configured for emitting light conducted from said light-emitting unit (102b) to the light-registering unit (102a) essentially in parallel with a detection face (109) of the apparatus (100).

7. (previously presented) An apparatus according to claim 1, characterised in that the apparatus further comprises an electric circuit (105) connected to said detector device (102; 102a), wherein said circuit (105) is configured for generating a signal (108) that represents an estimated amount of hydrogen, water and/or humidity content on the basis of the electric signal (106) from said light-registering unit (102a).

8. (currently amended) A method of detecting the hydrogen content (101) of an object comprising the steps of:

- emitting fast/energy-rich neutrons from a neutron source (103);
- detecting thermal neutrons by means of a detector device (102; 102a; 102b);
- braking and reflecting neutrons by collision ~~[[of]]~~ with a moderator (104; 104'; 104''),

characterised in that the method further comprises:

- emitting light by a light-emitting unit (102b) in the event of a nuclear event/reaction with a thermal neutron;
- emitting an electric pulse/an electric signal (106) by a light-registering unit (102a) upon recording of a flash of light;
- conducting light from said light-emitting unit (102b) to said light-registering unit (102a) by a light-conductive unit arranged between said light-emitting unit (102b) and ~~[[s]]~~ said light-registering unit (102a); of which said moderator (104'; 104'') is the light-conductive unit, where said neutron source (103) is embedded in said moderator (104').

9. (original) A method according to claim 8, characterised in that said light-emitting unit (102b) is a scintillator and that said light-registering unit (102a) is a photo-multiplier (PM) or a photo-diode.

10. (previously presented) A method according to claim 8, characterised in that said source (103) is arranged essentially in proximity of or around/in the centre of the face of the moderator (104', 104'') that adjoins the light-emitting unit (102b).

11. (previously presented) A method according to claim 8, characterised in that said light-conductive unit (104') is configured essentially with a face that adjoins said light-emitting unit (102b) and having a relatively smaller face adjoining a detection face (107) of said light-registering unit (102a).

12. (previously presented) A method according to claim 8, characterised in that said light-conductive unit (104'') is configured for emitting light conducted from said light-emitting unit (102b) to the light-registering unit (102a) essentially perpendicular to a detection face (109).

13. (previously presented) A method according to claim 8, characterised in that said light-conductive unit (104'') is configured for emitting light conducted from said light-emitting unit (102b) to the light-registering unit (102a) essentially in parallel with a detection face (109).

14. (previously presented) A method according to claim 8, characterised in that the method further comprises generation, in an electric circuit (105) connected to said detector device (102;

102a), of a signal (108) representing an estimated amount of hydrogen, water and/or humidity content, wherein said generation is performed on the basis of the electric signal (106) from said light-registering unit (102a).